



GLEANNER

SPRING-SUMMER 1969
DELAWARE VALLEY COLLEGE





GLEANER
SPRING-SUMMER
1969



GLEANER

ESTABLISHED
1901

DELAWARE VALLEY COLLEGE OF SCIENCE AND AGRICULTURE
DOYLESTOWN, PENNSYLVANIA 18901

The GLEANER is published twice during the school year by the students of Delaware Valley College of Science and Agriculture, Doylestown, Pennsylvania. The GLEANER is a student publication, and the opinions expressed within are not necessarily those of the GLEANER staff or the Administration. Neither the College nor the staff will assume responsibility for plagiarism unknowingly occurring within.

STAFF

CARL PFITZENMAYER '70
Co-editor

QUENTIN SCHLIEDER '70
Co-editor

Art Editor Norman Mogel '71

Business Editor..... Richard Hider '70

Literary Editor..... Donald Snively '70

Photography Editor L. Ivins Smith III '70

Typing Staff

Carl Pfitzenmayer '70
Dick Pflaum '70
Quentin Schlieder '70
Richard Tower '72
Kevin Webb '72

Art Staff

John Magin '71
Norman Mogel '71
Quentin Schlieder '70
Donald Snively '70

Photography Staff

L. Ivins Smith III '70

Circulation

Richard Hmiesleski

Business Staff

Richard Hider '70
Carl Pfitzenmayer '70

Contributors

David E. Benner, Instructor
Leon Bird '69
Stephen M. Cooper '70
Brodie H. Crawford '72
Howard Henderson '70
Bruce Horning '71

John D. Martin '70
Frank McDonough '70
William Moffitt '72
Dick Pflaum '70
Richard Polgar '72
Brian Rice '71
Ken Roux '70

Ronald L. Schaefer '69
Steven Schwartz '71
Donald Snively '70
D. Lee Strassburger '70
Scott R. Traino '71
Samuel J. Yant '69

Faculty Advisors

Dr. John Mertz Mr. Joseph E. Fulcoly Mr. Allan C. Hartley Mr. James A. O'Reilly

Cover by Norman Mogel under the supervision of Mr. James A. O'Reilly.

The GLEANER Staff wishes to thank the following: Dr. and Mrs. James Work, Dr. George Keys, Dr. Berthold, Mr. David E. Benner, Mr. Richard Dewees, Mr. Arthur A. Herr, Mrs. Evans, Mrs. Faaet, Gary Christensen, Barbara, Elmer and others.



Credit: Mike Morgan



Reginald D. Forbes

Born in New Jersey in 1891, Professor Forbes received his elementary education at Friend School in New York. In 1911, he received a degree in English from Williams College, Massachusetts and in 1913 a Master of Forestry Degree from Yale.

Mr. Forbes chose his vocation in forestry at an early age. His career has taken him from his home state across the country to New Mexico and Arizona with the United States Forest Service. After holding such positions as Assistant State Forester for New Jersey, Director of the Southern Forest Experiment Station, the first State Forester for Louisiana, as well as Director of the Allegheny Forest Experiment Station in Philadelphia, he retired from the Forest Service in 1942.

As an editor of *Forestry Handbook* for the Society of American Foresters, Professor Forbes came to Delaware Valley College in 1953 as Associate Professor of English and Instructor in Woodlot Management.

We are honored to dedicate this issue of the Gleaner to Professor Reginald D. Forbes, a pioneer in his field and an asset to Delaware Valley College.

BOWMAN'S HILL STATE WILDFLOWER PRESERVE



The Tower at Bowman's Hill Wildflower Preserve

Credit: L. Ivins Smith

thousands of visitors. (The preserve is located in Washington Crossing State Park, 2½ miles south of New Hope on Route No. 32.) Close to 47,000 people visited this area in 1968. Special guided tours by appointment are given to school groups, scouts, garden clubs, and other organizations. About six years ago, an educational trail was laid out for school children with a printed guide for teachers. Regular trail guides which list plant species in bloom every two weeks are available to the public. The height of bloom is during the month of May.

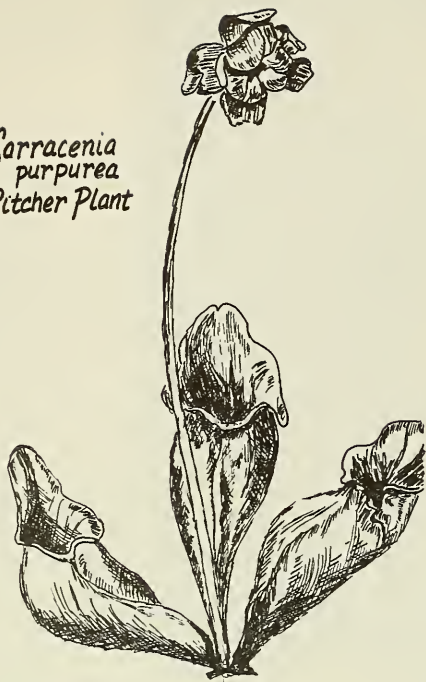
Great care has been taken to provide suitable ecological conditions for certain species while retaining the natural beauty of the area. In this respect, the Preserve is neither a garden nor an arboretum. One of these outstanding projects was the creation of an artificial sphagnum bog which contains Pitcher Plants (*Sarracenia purpurea*), Swamp Hyacinth (*Helonias bullata*), Climbing Fern (*Lygodium palmatum*), and numerous other species.

In 1950, the Preserve received the Founder's Fund Award from the Garden Club of America. With this fund, a pond was built for aquatic plants. Here one can see the Spatterdock (*Nuphar advena*), Royal Fern (*Osmunda regalis*) and, Lizard-tail (*Saururus cernuus*), to mention but a few.

Through the inspiration of several individuals, this 100 acre Preserve came into being in 1934. Since that time, legislative action has assured the maintenance and permanence of this unique area.

The main purpose and horticultural objective of the Bowman's Hill Preserve is the conservation of plants native to the state of Pennsylvania. More than 1,000 species are now established here and many of these are labeled for easy identification. With this treasury of so many native plants in such a restricted area, it is easy to understand the educational importance of the Preserve. From March to November, these plants are admired, studied and photographed by

*Sarracenia
purpurea*
Pitcher Plant



other animals. Success in germinating seeds was excellent, and by 1963, seventy-five species were growing from seed in this propagation bed, most of the seed having been collected at the Preserve. A seed exchange program has recently been initiated and a list of wildflower seeds for sale is now available.

Other interesting facets of the Preserve include the Audubon Trail for bird-watching, the Wherry Fern Trail, and Penn's Woods. Native shrubs, vines, and other plants producing food for birds have been planted along the Audubon Trail. Most of the native species of fern (of which there are about eighty), can be seen on the Wherry Fern Trail. Penn's Woods is a tract of fifteen acres within the Preserve containing native trees of Pennsylvania.

In 1960-61, four special habitats were constructed along the Aster Walk Trail in an effort to duplicate unusual soil conditions found throughout the state. These four habitats are the Serpentine Barren, Bare Limestone Habitat, Bare Sand Habitat, and a Devonian Shale Habitat. About twenty-five species of native plants not formerly grown successfully at the Preserve are now becoming established here. Quite a number of these species are endemic. For example, Shale Evening Primrose (*Oenothera argillicola*), Prostrate Mountain Clover (*Trifolium virginicum*), and Shale Groundsel (*Senecio antennariifolius*), are all endemic to Devonian Shale Barrens in southern Pennsylvania.

In 1961, a small area was cleared for a propagation bed. Turkey wire fence five feet high was erected to keep out deer and



Saururus cernuus
Lizard's Tail

Approximately 85 of the 123 native tree species are now growing here. There are twelve other trails, each sponsored by a Garden Club. The total length of the fifteen trails is about three miles. Four illustrated summer nature lectures are given each year from June through September. Nature walks are also scheduled throughout the year as well as classes in plant identification, plant propagation, etc. Groups and organizations interested in an illustrated lecture about the Preserve may write to the Park Botanist, Washington Crossing State Park.

There are several problems which should be mentioned concerning preservation and conservation. Probably the most serious problems at the Preserve for the past fifteen years has been damage to the plants from deer. To date, no solution has been found. Vandalism, prolonged droughts, and lack of sufficient personnel (especially during the busy season) also hinder progress, development, and preservation at Bowman's Hill. An increased operational budget would help to eventually solve these problems.

The fact that the Preserve area is sacred ground in the pages of American History only serves to add greater importance to the endeavor. It was here that Washington's Army camped in December, 1776. Some of the present plant species once had ancestors growing here in Washington's day. And so the Preserve serves as a living memorial to Washington and his soldiers.

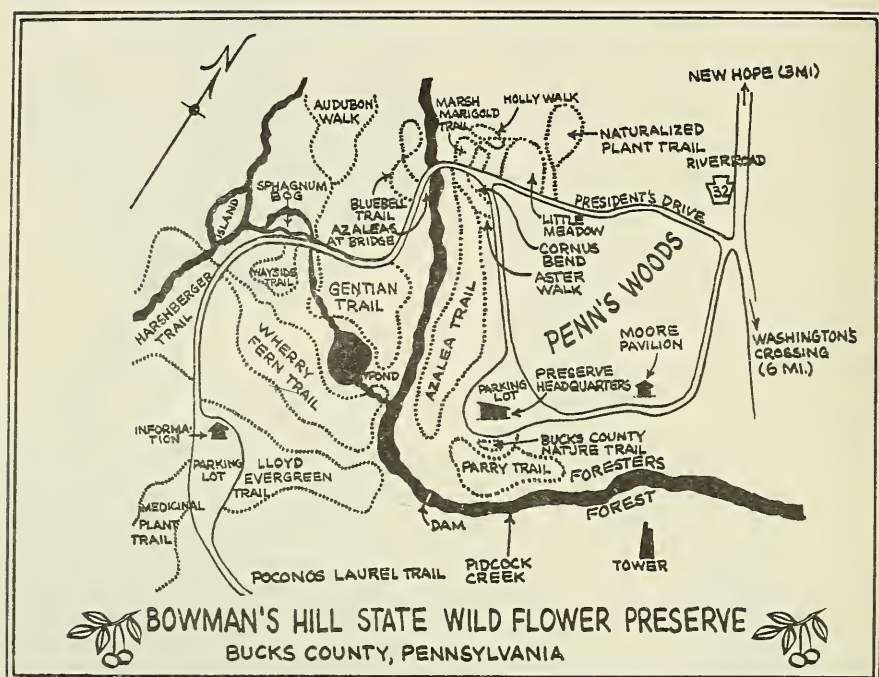
With the accelerated expansion of present day civilization encroaching upon our remaining woodlands, farms, meadows, and streams, preserve areas such as this take on special significance and importance. To commune with Nature, to enjoy the peace and quiet of forest and to escape from the busy, noisy world of today — these are a few of the reasons why thousands of people visit Bowman's Hill State Wildflower Preserve each year. This is why more natural areas should be set aside as soon as possible for posterity to enjoy.

Nuphar advena
Yellow Pond Lily



“I seek acquaintance with Nature — to know her moods and manners. Primitive nature is the most interesting to me. I take infinite pains to know all the phenomena of spring, for instance, thinking that I have here the entire poem, and then, to my chagrin, I learn that it is but an imperfect copy that I possess and have read, that my ancestors have torn out of the first leaves and grandest passages, and mutilated it in many places. I should not think that some demigod had come before me and picked out some of the best stars. I wish to know an entire heaven and an entire earth.”

Henry David Thoreau — March 23, 1856



Stephen Maddock Cooper '70

Death's child

... And as the dark grew darker, a quiet tear arose and fell and rolled over the waves of wrinkles that was his face. A lonely wait for one such as he and yet ... all too short a wait for one born so wise and dead so young.

'69

SOIL CONSERVATION IN THE COMMONWEALTH OF PENNSYLVANIA

Editors' Note:

The following is a summary of a paper presented by Mr. Kemmerer at the 22nd Annual Soil Conservation Society of America meeting in Des Moines, Iowa on August 18, 19, 20, 21, 1967.

Mr. Kemmerer wishes to thank Mr. Charles Slaton, Mr. Jack Nehoda, Soil Conservationist Bucks County Soil District, Dr. Julian Prundeanu and Dr. James Work for their assistance in preparing this article.



Pennsylvania, the "Keystone State," is searching for one of the many keys to its conservation problems. This one key is not what will be done, but what has been done, and what is being done.

We cannot do anything with soil until we know what type we have. This is taken care of by soil surveys.

Approximately sixteen million acres of land have been surveyed to date in the Commonwealth out of a total of twenty-eight million acres. Soil scientists of the Soil Conservation Service have identified over 1,000 kinds of soils. Some soils are deep, some shallow, some poorly drained, while other soils are well drained. Most of the better agricultural soils are located in Southeastern Pennsylvania.

Soil surveys are now being used by farmers, agricultural workers, land-use planners, land developers, and others. The surveys provide invaluable information used in building highways, constructing recreation parks, planning conservation systems, protecting watersheds, farming, and many other uses.

Last year, more than two hundred communities in Pennsylvania used soil survey information for various uses, including water inventories, selecting urban areas and industrial sites, and in developing research and recreation grounds.

Soil surveys are used in identifying these soils which can be used for on-site sewage disposal systems. The Department of Health is primarily interested in soil surveys in determining where new housing developments can be located which are not serviced by commercial sewers.

But what good are these surveys unless we put them to use? Start with the one problem everyone sees, soil erosion. Soil erosion is a dominant problem on much of the sloping cropland in the Commonwealth. More than one-half of the top soil has been removed by sheet and gully erosion on the sloping land.

Pennsylvania farmers recognize the problems of soil erosion and are moving ahead aggressively with their conservation work. They have established a million acres in strip cropping and over three thousand miles of diversion terraces. Thousands of miles of tile have been laid to improve the soil, and thousands of acres are being used for grassland. Last year alone, over

45,000 acres of grassland were improved in the Commonwealth and over 20,000 acres of wildlife habitat were established. These achievements have been made possible by the establishment and the work of the Soil and Water Conservation Districts.

Today, sixty-four of Pennsylvania's sixty-seven counties have been organized as Soil and Water Conservation Districts. This covers approximately ninety-eight per cent of the land in the Commonwealth. More than 35,000 farmers are now cooperating with districts all over Pennsylvania, and they are carrying out an enormous amount of soil, water, woodland, and wildlife conservation work.

Today, Pennsylvania Soil and Water Conservation Districts are in the forefront in developing county-wide resource conservation plans. Forty-two of Pennsylvania's districts have completed an inventory of their natural resources of soil, water, woodland and wildlife and they have identified the key resource problems in their areas. Their long range plans also outline opportunities for developing the natural resources in an orderly fashion.

Above we have discussed soil problems, but what about our water problems? In 1954 the United States Congress enacted Public Law 566, commonly known as the Small Watershed Act. Under this act, the local people can work with the Federal and State Governments in building dams for flood prevention and storing water for recreational, municipal and industrial supplies. This program enables the local people to solve, with the help of the Federal and State agencies, some of the difficult resource problems which they could not solve alone.

To date, twenty-one projects have been authorized for construction in Pennsylvania. One-hundred-seven flood prevention structures are included in these watershed projects. Many of the structures are multiple purpose, providing flood prevention, recreation and water supply. Twenty-six flood prevention dams have been built and seven others are now under construction.

Over two million acres of land are included in watershed applications submitted by thirty counties in the Commonwealth. This is evidence that the Small Watershed Program works.

What does all this mean to people living throughout our rural districts? The programs administered by the Soil Conservation Service are aimed at making the rural areas a better place in which to live, for agriculture, for industry and for the community as a whole. Last year, 21,000 land owners were given technical assistance in solving soil and water problems. These measures will help to improve the family farm by providing for a more efficient and more economic use of the land. The Small Watershed Program is aimed at accelerating the conservation work throughout the watershed area. It also provides for eliminating flood hazards to agricultural and urban areas. Under the Small Watershed Program, new recreational facilities are developed for use both by the rural and urban people.

These are a lot of figures, yes, but they mean a lot to many people — approximately twelve million of them; 110,000 in agriculture alone and 66,000 in mining. This acreage also represents almost five million acres of good cropland including 1,200,000 acres in corn, 500,000 acres in wheat, 630,000 acres in oats, and 2,160,000 acres in hay.

With all of these figures, I would say Pennsylvania has a lot to do in Conservation. It is not Soil and Pennsylvania's Future, but it is Soil which is Pennsylvania's Future.

THE CAPE HATTERAS NATIONAL SEASHORE



The Cape Hatteras National Seashore is one of the most interesting stretches of land in the United States. Stretching for seventy miles, this narrow spit of windswept sand lies between serene Pamlico Sound and the churning Atlantic. Through the years it has become a haven for naturalists, surfers, campers, fishermen, and historians.

Fishermen visiting the Cape enjoy both surf and deep sea fishing. Autumn is the prime time to surf fish, since red drum, croakers, bluefish, spot, and sea mullet become plentiful during this season. Deep sea fishing is usually extremely rewarding between March and November because of the close proximity of the warm Gulf Stream. Landing a fighting blue marlin or a jumping sailfish is an experience few forget.

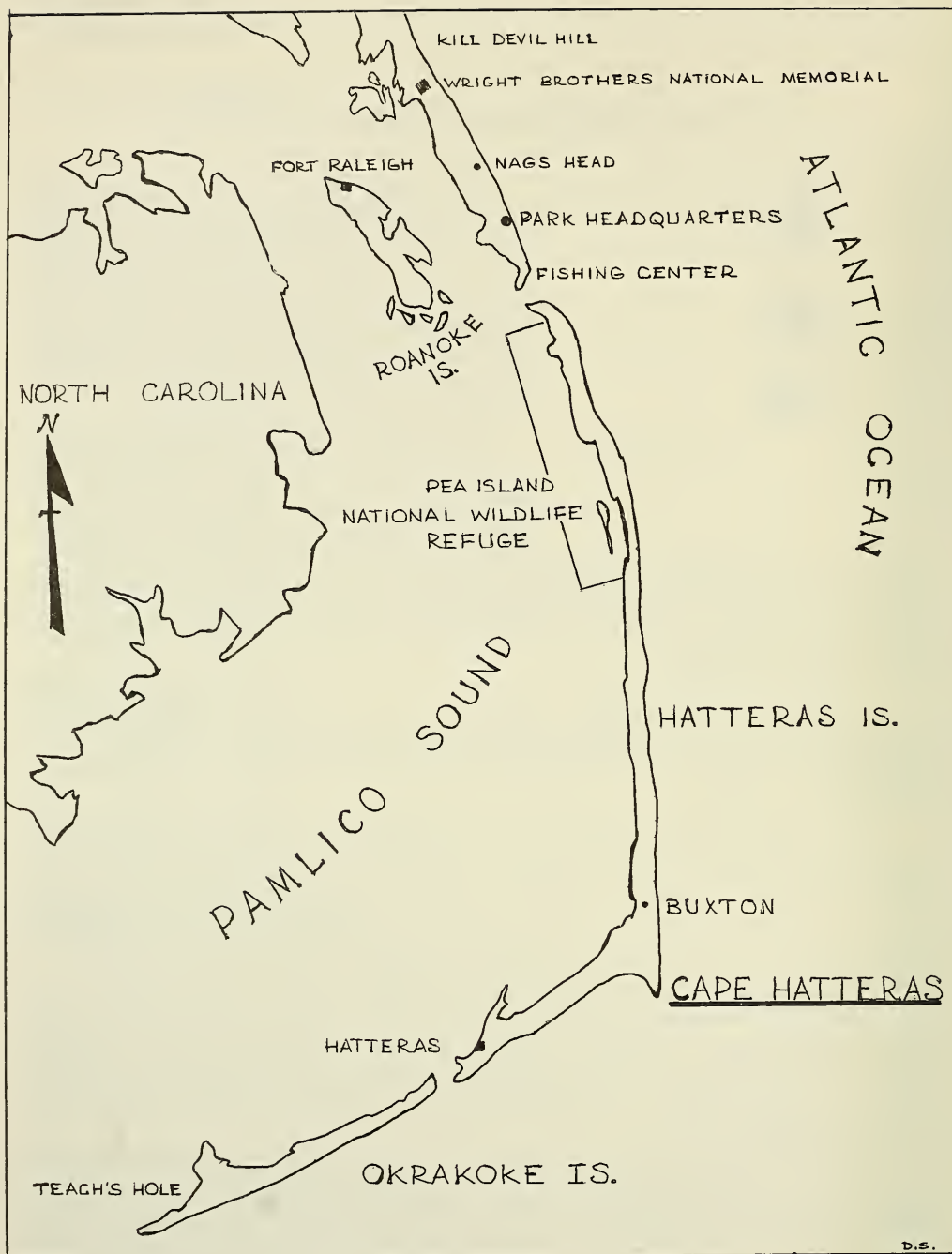
Pamlico Sound also offers much to the fisherman. Equipped with a small power boat and light tackle, a person can be occupied for hours catching scrappy sea trout and mackerel. If one has sharp eyes and a strong net, an occasional snapping turtle can be snagged in one of the Sound's murky lagoons.

As a result of the nearness to the Gulf Stream, the Cape Hatteras area enjoys a rather mild climate. Summer temperatures rarely exceed 78° while winter temperatures range from 30° to 64°. Because of the high rainfall (fifty-five inches annually) and temperature, a high humidity results, averaging 81 per cent. Snow rarely occurs but winds of hurricane capacity are a frequent happening during the autumn months.

Many interesting people are attracted to the Cape, such as surfers, artists, authors, and naturalists. Behind the barrier dunes, tents and camping vehicles of all kinds are used. Camping adjacent to the wide beaches makes it convenient for surfers to take advantage of the lively surf on the northeastern tip of the Cape.

Curious naturalists find the flora of the Cape very interesting in that the woodland on the Cape is semi-tropical in nature. Spanish moss, a member of the Pineapple Family, thrives on the branches of trees while Sabal palms, with their fan-like leaves, flourish on the forest floor. Thickets of yaupon (*Ilex vomitoria*), with their clusters of scarlet berries are a beautiful sight in winter. Forming the skeleton framework for the woods are the stately live oaks (*Quercus virginiana*). American beauty-berry (*Callicarpa americana*) shows off its gleaming magenta berries in early September while the ripe fruiting heads of sea oats (*Uniola paniculata*) dot the surrounding dunes, giving an effective contrast of shape and texture to the terrain.

The golden beaches of the Cape Hatteras National Seashore are extremely



wide (three hundred feet) and provide ample room for all visitors and their activities, be it an evening clam bake or an early morning swim. With the pounding surf as a background, a Cape Hatteras sunset with its vivid hues of orange and red is truly a dramatic sight.

The sands of Cape Hatteras continue as shoals twelve miles into the Atlantic. Standing on the tip of the Cape, one can see the warm waters of the Gulf Stream slam with fury into the colder currents from the north. As a result of this tremendous wave action, underwater dunes such as Diamond Shoals have been a nuisance to ships for centuries. The remains of the Monitor, the ironclad warship of the Civil War, are a few miles southeast of the Cape Hatteras lighthouse. Six sailors are said to occupy an unmarked common grave at the foot of a tall red cedar six hundred yards from the lighthouse.

Numerous wrecks of old ships can be seen strewn on the otherwise unblemished beaches as a result of Diamond Shoals. One of the most spectacular shipwrecks was that of the five masted schooner, the "Carroll A. Deering." It was found stranded on Diamond Shoals off Okraoke Island in 1921 with food still in the pots but with no crew aboard, the only living thing being a cat. To this day the fate of the crew is unknown.

Adding to the eeriness of the area is the legend of the ruthless Edward Teach, infamously known as Blackbeard. He used Springers Point on Okraoke Island as a rendezvous point. Adjacent to Springers Point is Teach's Hole where Blackbeard met his death while attempting to escape capture by a Virginia expedition. It has been the weird experience of the author to witness on a moonlit beach a group of transcendentalists trying to communicate with the spirit of Blackbeard so as to find out where his purported massive buried treasure lies.

In 1915, the Coast Guard evolved from the merging of the Life Saving Service and the Cutter Service. During World War I, most of the crew from the blazing tanker "Mirlo" were saved by the men of the Chicamacomico Coast Guard Station. Playing an important role in World War II, the Coast Guard in the three island area maintained a coastal defense system. The courageous men of the Coast Guard saved lives and recovered bodies of Allied seamen who had been victims of marine sinkings at "Torpedo Junction." Today there are four active stations in the National Seashore area.

The most renowned Coast Guard station is on Cape Hatteras Island and is actually overlooking the Cape. It boasts the tallest lighthouse in the nation, soaring 208 feet into the sky. Its twenty mile beam guides ships safely past Diamond Shoals. Visitors can behold the breath-taking panorama of the Cape and the blue-green Atlantic from the summit of the lighthouse.

Points of interest near the Cape are the Wright Brother's Memorial at Nag's Head, sporting the largest dunes on the Atlantic Seaboard, and Roanoke Island, the site of Sir Walter Raleigh's attempt to form the first English settlement in the New World in 1586.

The Cape Hatteras National Seashore Recreational Area is an interesting and rewarding place to visit because of its unique heritage and the many things which it offers to visitors. People who have been to Cape Hatteras once find it hard not to return.

HUMAN EXTINCTION

The near-naked man crawled slowly over the rocky terrain. Often he would stop to rest and look around unbelievably at the fantasy-like world that he was now cast into.

Somehow he could not conceive of such a thing as being possible. Was this a dream? Was this the world he once knew? He had not seen a living soul for six days. He knew. He had counted. The things he had seen had no soul but were beasts, unlike anything he had ever seen or even dreamed possible.

He had counted the arrivals of different creatures on the morning of each day. They were horrid and massive and out of proportion. Even the vegetation (what was left of it) was going berserk, growing and climbing and stretching to no limits. Nature had gone wild and lost her mind.

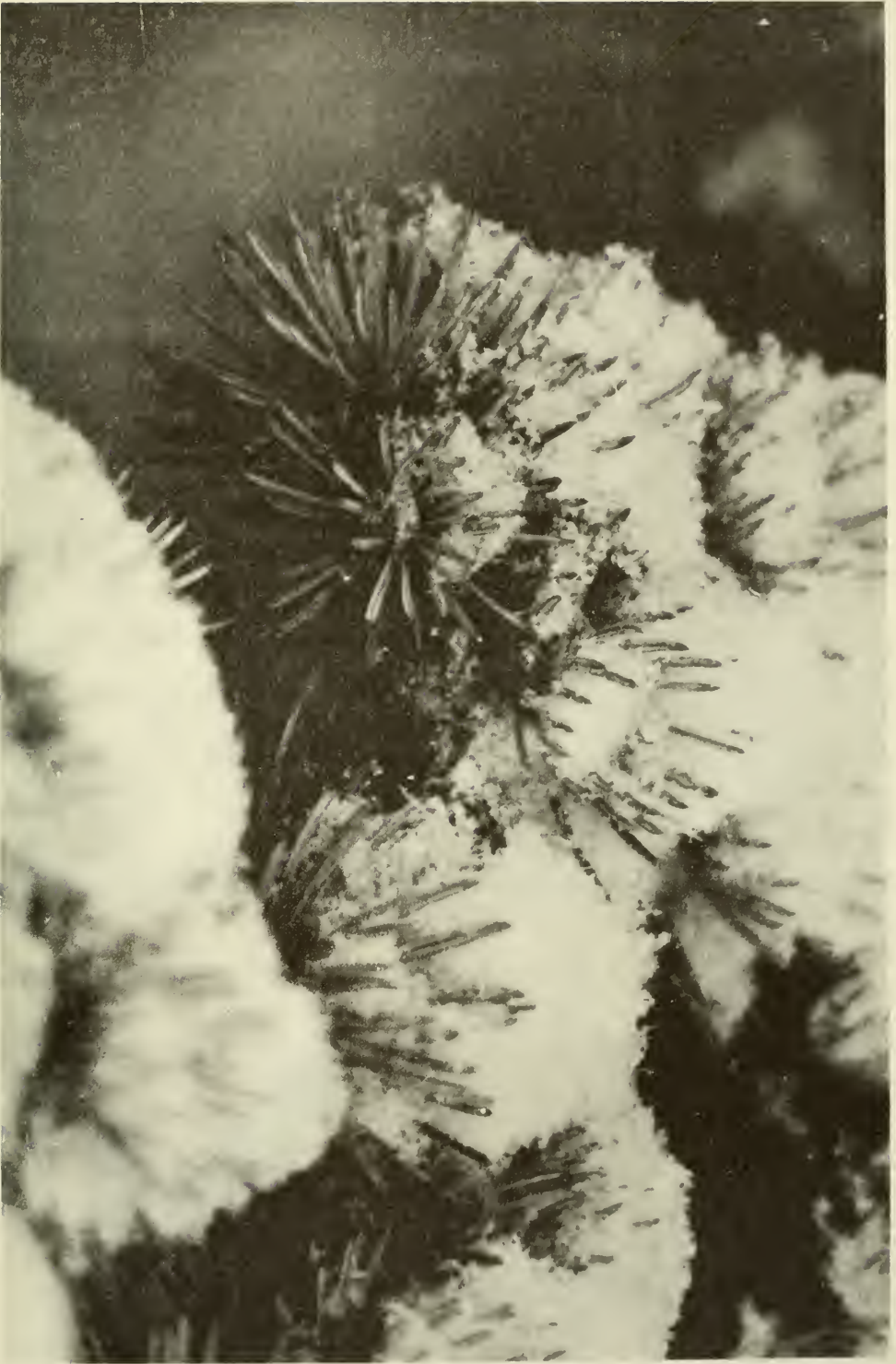
He had come a long way since the day of the great light and intense heat. Running, walking, and now crawling. Until now he had not known where he was going or why. Now he knew.

The pain of the flesh had left him now. He was numb . . . left with the agony of a disbelieving mind.

Bruce Horning '71

THE SNOWFLAKE

A snowflake,
Born of a wisp
Of vapor,
Drifts to earth
From some unseen
Place among the dismal
Grey clouds above.
It gently glides and
Wanders with the wind,
Until it touches the earth
On the grey sidewalk
Here before me,
Leaving no real trace
Of its passing,
Except my quickly fading memories
And a tiny spot of
Moisture.
Life is a snowflake, too.



Credit: L. Ivins Smith III

AT RAINBOW'S END

It was a new day for Sam Walker. A gentle breeze rustled through the skeleton of a holly bush next to the house. A light frost covered the brown grass. A lone blackbird flew from one tree to another, stopping only a short while, looking hopefully in every direction. He flew to the top of the barn, hopping frantically back and forth in a small area. The bird then took off, as if answering a beckoning call, and disappeared over the hill. Sam couldn't help but think, "Looks like it might be a bad day." He looked out across the fields, painfully squinting from the morning glare, and stared at the impending sentinels of the forest, so naked and gray, as they scrutinized their surroundings. He didn't like it, he didn't like it at all. It wasn't just the fact that the prospects for the rest of the day looked bad, but it was something more, something that went a little deeper. It was the trees. Sam didn't like to see trees in the winter. It didn't matter what the species was, it could be any tree, anywhere in the country. The mere sight of one would send Sam back into the past, time, 1944, place, a tiny village in the northern part of France.

He was a navigator in a B-25. He was literally on top of everything, calling the shots as they were. He directed the plane, its crew, and massive payload from village to village, city to city throughout France and Germany for more than two years. Most of the time it wasn't too bad. When you're sighting in a target at 20,000 or 25,000 feet it sometimes can be difficult to find tall buildings, let alone see people running about. But still, he felt bad after almost every mission, be it successful or not. He felt as if he was, indirectly, the cause or the guilty party in all the horrible death and destruction. His last mission was such a piercing nightmare to his subconscious that he spent eight months in the psychiatric ward at the base hospital for critical depression. He was spared a medical discharge, and was assigned to a desk job for the rest of the war.

It all took place over a small village in the northern part of France, which, according to intelligence reports, was supposedly the site of a huge supply and ammunition dump, which theoretically spelled out a new German offensive blowing in the wind. The order came down; destroy the village at all cost. Eighteen bombers took part in the mission, which was to say the least, a success. The group encountered no enemy resistance of any kind, the only trouble coming from nature. A huge frontal system moved in, covering much of northern France with a thick overcast. This wiped out any hope of a normal 20,000 foot drop. They would have to go in under the clouds to insure a clean kill. The sky finally cleared at 2,200 feet. The village came in clear and quite detailed under Sam's Bausch & Lomb bombing scope. After that, the last thing Sam could remember were the fires—fires and smoke everywhere. The entire village was just about gone after one sweep. The group swung back to confirm the kill. Sam was ordered to take another sighting and report the damage, being especially alert for secondary explosions. When

he looked, all he saw were people, hundreds of people running for cover. But where, what cover could they possibly find in their hell on earth created for them by an unknown enemy from above? But still they ran, all in one direction, just as if instincts alone were directing their behavior. Of course, they were heading for the woods that partially surrounded the village. "Good," Sam thought. "At least they'll be safe there. They'll have a chance anyway." Suddenly without warning five bombers broke from the rest of the group. They were heading for the woods. For some reason they were going to bomb the woods. But the people, all the people were in the woods. Sam just sat there and watched as the bombs went whistling into the woods. The trees, those ugly trees, wearing their distasteful coat of winter had formed an enticing haven for death. The people were caught completely by surprise.

That's the last thing he remembered and kept remembering for twenty-five years, every time he saw a tree in winter, "The past, you can't live in the past!", Sam mumbled to himself.

"Oh!" "If I only had a dollar for every time I've said that, I'd be a rich man, instead of . . . oh well." Sam slowly turned, and strolled towards the house. He eased up the weather worn steps, being careful to avoid contact with the splintered railing. He pulled at the tattered storm door, and walked into the dimly lit musty kitchen.

Breakfast had to be made, and the dogs fed. Sam had been waiting for this day for a long time. His grandson, Robby, was coming down from Oakville to hunt with him for the first time. Sam quickly made himself some toast and coffee, and gave the two, time-honored, springer spaniels their morning meal. He put on his boots and hunting vest, and moved over to the knotty pine gun cabinet made by his father over fifty years ago. He reached in and eased out a forty-year-old, double barrel, twelve gauge, Beretta Silver Snipe. He moved slowly with the gun, checking over its worn exterior, as if he was looking at it for the first time. He broke it open and checked the barrels in sunlight. He brought the Beretta and a box of shells into the kitchen and laid them on the table.

No sooner had he finished the last of the coffee did his son and grandson



arrive. Sam quickly ran to the back steps, where he displayed a brisk wave and a hardy, "How ya doing boys?" Robby ran to the top of the steps where he was hoisted aloft and given a bear hug.

"Well, I'll be. You've grown faster than a pup on goats milk, yes sir, I just can't believe it. Well, are you ready? I think it's going to be tough out there today, but we'll see, who knows. Well, I guess I'll see you later on, huh, Mike?" Sam said to his son.

"Right, dad, and you mind your grandpop, hear Robby?"

"Yes, sir."

"O.K., Robby, you go get the dogs, and I'll get the gear ready." It wasn't long before everything was in order, and the two of them were off for the fields.

"Boy, I can't wait, grandpop, ya know I haven't got a pheasant yet, that's right, in two years of hunting, not a single pheasant."

"Just remember, Robby, lead and follow through."

The dogs worked the field thoroughly. It was a beautiful sight.

"You know I'm going to have dogs like yours someday, grandpop, a kennel full."

Sam just smiled, and watched the dogs work. The two of them walked for an hour, with nothing to show for it but two pair of briar covered pants.

"What do you think, Robby?"

"Oh, I think we should see something soon."

"No, I don't mean that, I mean the world, like, you know."

"What do you think?"

Robby stopped and stared at his grandfather, and for the first time he noticed a strangely detached look.

"Well, I don't know, I think America's great. You can do whatever you want, whenever you want, with whomever you want."

"Everybody likes everybody else, and you're always having fun."

"And when you grow up, Robby, what happens then?"

"Oh, it gets better. You can do more. When you're an adult you have your own car, lots of money, and a house. You're on your own, with no problems, no cares, no worries. Right, grandpop?"

"Yea, Robby, that's the way it is, all right."

"I can't wait, you know, grandpop. I can't wait till I grow up. I'm going to be just like you."

Suddenly the dogs found a trail. Working together they ran it down. Sam and Robby spread out and followed up the dogs. A cold chill ran up Robby's back. He started to shake. He reviewed everything in his mind, lead, follow through, keep both eyes open, don't pull the trigger, squeeze it, keep your eyes on the bird, don't flinch, everything over and over again. Without warning the bird was up, a glittering, rattling, masterpiece of nature shining in the morning sun. It was a mammoth cock, with a tail as long as a rainbow. He flushed just ten yards ahead of Robby, like a spring straight in the air. It was the type of a shot that a wing shooter dreams of. Robby raised his gun, peered down the rib of the barrel and brought the bird into sight. A shot rang out, Robby fell to the ground, and the pheasant flew across the field and into the woods.

Sam lowered his gun and walked up to Robby. He bent down, knelt on one knee, and propped Robby's limp body up by the shoulders. In a low

cracked voice, with a single tear rolling down his cheek, and Robby's blood oozing through his fingers, he muttered, "It's all right now, Robby. I've taken care of everything. I've saved you."

Steven Schwartz '71

GOOD TIME

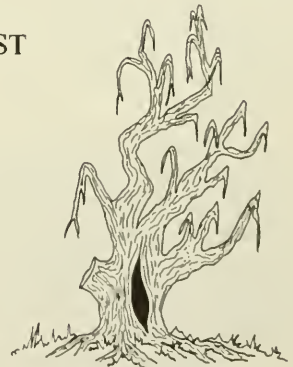
A seed is planted into a soil.
With a guiding hand and God, a miracle
takes place.
Time, Water, Sunshine, the earth's minerals,
a hand, all help to create a masterpiece.
Life, a new life is to enter a dismay.
People help, do not walk on it, do not
cut it, do not stop its life.
Help, lend time and open your
heart and hand, It only has one life;
Let it die a good death, natural.

Richard Polgar '72

Illustrated by Quentin Schlieder '70

THE TRADITIONAL HARVEST

A tree needs roots
Only to gather the essentials
Which feed new shoots,
That push upward with new potentials.
The shoots continue to grow,
But the roots stay the same.
They served their purpose, you know,
And now they just remain.



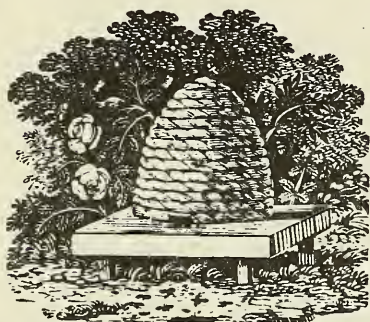
APICULTURE — WHAT IT'S ALL ABOUT

Editors' Note:

The GLEANER Staff wishes to extend its appreciation to the Apiary Society for the following articles pertaining to Apiology, the applied study of bees. We also wish to thank Gary Christensen, President of the Society, and the other members for their cooperation and assistance. We would like to express our gratitude to Dr. Berthold, their advisor, for his patience and cooperation.

Donald Snively '70

A CAPSULE HISTORY OF APICULTURE



A skep was an early structure used to house bees.

had changed from hunter and collector of food to producer of food, thus it had no single specific origin.

Apiculture, as we know it today, evolved from primitive man's wanting to conserve honey for his convenience. Before the establishment of the group of hives known as an apiary, primitive man had to resort to robbing the bee's nests located in hollow trees for his supply of honey. With correct supervision, separate hives were utilized and were clustered together in an apiary for convenience and safety. The quality of the hive depended on the materials at hand and the ability of the builder. Apiculture developed wherever man

The earliest general center of apiculture was in the Middle East at approximately 5000 B.C. where hot, unforested land prevailed. Clay pots provided the first hives for the bees and are still used for this purpose in the Middle East. Certain agricultural communities used woven baskets for many reasons. As a result, bees began to settle in these wicker havens from the heat and sun.

These very early crude hives provided certain necessary characteristics for the culture of the honey bee, such as protecting the bees from the wind, rain, and extreme heat and cold. In addition, entrances were small enough for the bees to enter while a larger entrance existed for the convenience of the beekeeper.

Because of man's limited knowledge during these early years, his beekeeping techniques were truly limited. For example, very primitive beekeeping consisted only of providing a hive and killing the bees to get the wax and honey. The Egyptians utilized the technique of smoking to drive the bees from the hive while the Romans began the principle of feeding the bees. The people of the Middle Ages devised protective clothing to be used when handling the hives.

Up until the sixteenth century, little was done in the way of progressive

knowledge in the realm of beekeeping. As an illustration, very little was known about the sexes of the bees in regard to honey and wax formation.

In the sixteenth century, three main happenings aided in the revolutionary advent of modern beekeeping. An understanding of the primary facts in the life cycle of the honeybee is the first of these factors. Numerous people aided in the accumulation of knowledge about the sex life of the honey bee. Prince Cesi published drawings of the first honey bee viewed under the microscope in 1625 while Butler and Remnant wrote about the functions of the drone and the queen.

Development of beekeeping techniques is the second important factor in the revolution of apiculture. New ways of acquiring the honey without killing the bees were developed between 1500 and 1851. Also evolved during this period were ways of handling the combs easier and of observing the bees in action.

The final factor in the breakthrough of apiary practice was contributed by the spread of the honey bee throughout the New World. Originally, the honey bee was only centered in the Old World. The honey bees that we have in America today are a result of the various migrations from the Old to the New World as immigrants brought hives with them on their long journeys.

Up until 1851, no really suitable hive had been developed. This inefficiency was changed by Lorenzo Lorraine Langstroth, who developed a hive with removable, suspended frames. This eliminated the cutting of the combs from the wall of the hive, a very disagreeable task.

With the invention of the movable-frame hive, modern beekeeping began with a surge of power. Further inventions, such as the beeswax foundation by Mehring, the centrifugal honey extractor by Hruschka, and the queen excluder by Collin aided in developing the science of apiculture as we know it today.



Modern hive with removable suspended frames was invented by Lorenzo Lorraine Langstroth.

BIBLIOGRAPHY

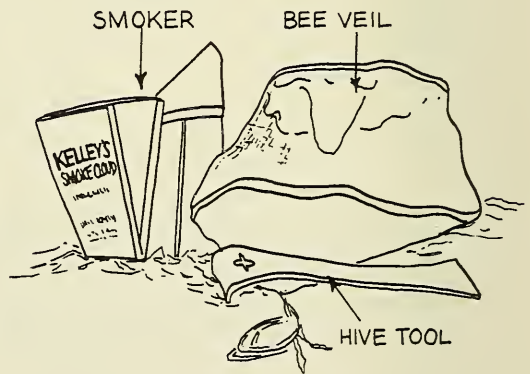
- 1 Grout, Roy A., *The Hive and the Honey Bee*, Hamilton, Illinois: Dadart and Sons Inc., 1966.

BEGINNING WITH BEES

This article is aimed at those persons who are primarily interested in beekeeping as an avocation. However, beekeeping can be profitable, and although begun as a hobby, it can easily become a rewarding profession.

Equipment Needed

The hive is the most important piece of apparatus in setting up an apiary, as a beeyard is commonly called. The hive consists of the standard ten frame hive body, frames, bottom board, telescoping cover with inner cover, and entrance reducer. A pre-wired wax frame foundation is used by the bees in building the comb, and provides the needed strength to keep the comb from sagging and breaking. The more experienced beekeeper can imbed wire into the foundation, however, this is usually quite difficult for the novice. The few extra cents invested in a prewired foundation is well worth the money. All of these items are readily available from suppliers.



Equipment used in working with bees

Credit — L. Ivins Smith III

Unfortunately, there are those rugged individuals who insist on constructing their own equipment. Problems often result when the custom equipment is not the same dimensions as standard models. It is best to purchase standard equipment to permit interchangeability of parts.

An established colony can be obtained from another beekeeper, however, the purchaser should be careful to check the bees for disease. A county agent can often provide this service.

Location of the Apiary

Vast land holdings are not a prerequisite in enjoying beekeeping. People have been known to enjoy this hobby by having their colonies on the roofs of city dwellings. However, this doesn't mean that bees will do well in just any location. Best results are achieved when the hives are sheltered from winds by natural or artificial barriers such as hills, buildings, or hedgerows. Excessive cold winds during the winter can cause the bees to use up too much stored food, possibly resulting in starvation and death of the colony.

Permanently shaded areas should also be avoided when locating the hive. Direct or lightly filtered sun for most of the day is the optimum exposure, since it induces the bees to forage for nectar and pollen. Excessive dampness should be avoided since such a condition can retard the ripening honey and possibly cause disease to break out in the colony. Excessive dampness can be minimized if the hive is raised four to six inches off the ground by placing it on bricks or stones.

The Bees

Undoubtedly the most important factor in successful beekeeping is the bees themselves. There are several races of bees to choose from, each exhibiting slightly different characteristics. Italian and Caucasian are the two most common races.

The Italian bee is the common yellow honey bee. It works well, is gentle, resists European Foulbrood, and overwinters fairly well. This race is most often found in the apiary.

On the other hand, Caucasian bees are dark, prolific, gentle, do not swarm excessively, and also overwinter well. This race can cause problems for they build excessive burr-combs and gather large amounts of propolis, a sticky, resinous material, which makes handling more difficult.

Relatively new to the bee world are the hybrids. Heterosis in the areas of gentleness, high productivity and better overwintering is usually evident. The Italian hybrids are noted for their high productivity, while Caucasian hybrids are exceptionally gentle.

Each individual usually has a preference. However, it is generally agreed that the pure bred Italian bees are best for the beginner.

In obtaining bees for the hive, it is best to purchase them from a reliable firm. Prices and addresses can be found in any apiary journal. Two of the most popular publications are *The American Bee Journal* and the *Gleanings on Beeculture*. It is generally advisable to choose a firm who has listed its advertisement with the publication over a period of years, since his quality is more certain than that of other growers.

Another method used to obtain bees is to capture a swarm. A swarm is nature's way of alleviating overcrowding in the colony and expanding the races of bees. Swarming often occurs in early summer. The queen will leave the hive with most of the colony. The swarm will establish a new colony as soon as a suitable place is found. Many times this new home will be an empty hive nearby, and the clever apiarist uses this generality to advantage by providing such a situation. The queenless colony soon nurtures a new queen of its own.

Establishing the Colony

The hive should be prepared prior to the arrival of the colony. Upon arrival, the colony should immediately be fed a moderately thin sugar solution. This solution is brushed onto the cage until no more is accepted. It is interesting to note the amount of the solution that is consumed by the colony. If the bees can not be placed into the hive immediately, the cage should be placed in a cool dark place to keep the bees quiet.

It is a real challenge not to panic as the bees come at one upon opening the package. However, no problems should occur if a few simple rules are followed.

1. Feed the colony before attempting to place them in the hive.
2. Take precautionary measures such as wearing a bee veil and gloves.
3. Light the smoker. (Fuel for the smoker may consist of old rags or cardboard.)
4. Remove the queen's cage and fix it in such a way that the bees can get her out within a few hours.
5. Place the queen's cage on the bottom of the hive.
6. Pick the package up and shake the bees to the bottom of it. Open the package, and dump the bees into the hive.
7. Sprinkle the hive with food.

All of the above procedures should be carried out in the evening, since the cool evening temperatures calm the

bees. In addition, this method gives the bees the entire night to adjust to the new hive, and prepares them to ward off robbing bees the following day.

It is advisable to check the colony after about ten days. A feed can of sugar solution may be provided for the first few weeks to keep the bees from starving.

Another check should be made in several weeks to determine if the queen is laying her eggs, and that no disease has developed within the hive.

With good management, a return on the investment, in terms of personal satisfaction and honey, should be realized the second season.



Smoking the hive while working with the bees.

Credit - L. Ivins Smith III

ACTIVITIES OF THE WORKER BEE



Bees pollinating a marigold while foraging for nectar.

Credit — L. Ivins Smith III

The first phase are kept busy bringing honey and pollen from storage cells to feed the queen and the drones as well as feeding their brothers and sisters which are still in the larva stage. To show how busy these workers are kept, the single larva averages 1,300 meals per day.

In the second phase, wax is secreted by the workers from glands which open between the segments on the underside of its abdomen. In this process, the bees will cluster near the top of the hive where the temperature is the highest. As the wax is secreted, it dries into small scales which are removed from the abdomen by the hind legs and passed forward to the front legs. The bee then chews the wax thoroughly to prepare it for use in comb building. At first, the worker merely smears the wax approximately where it is needed and then later will stretch and pat it into its final precise alignment with the rest of the cells of the comb.

Other inside work which falls to the younger bees includes house cleaning. The workers quickly remove any of their dead or sick friends, clean cells for reuse, and remove strangers from their midst. To prevent entrance of their natural enemies, the hive is guarded by workers who post themselves near the entrance. The guard bees change constantly, but there are always many bees alert to intrusion.

When spring comes and man's mind turns toward thoughts of the birds and the bees, what does the bee's mind turn toward besides flying around, getting squeals of terror from girls, and bothering students and professors in the classroom?

The fact is, the honey bee, modern agriculture's best friend, is thinking only of her hive duties. Each worker, as it is born, begins a regular sequence of events or duties according to age. The rest of the life of the worker is roughly divided into three phases. The first phase or function is that of a nurse. The second phase is to make short flights from the hive and to secrete wax; the third and final phase is that of foraging for nectar and pollen.

The young workers in the

The third and final phase is that of foraging for nectar and pollen. This of course is the most important phase to bee keepers. This activity of collecting nectar and pollen is how honey is obtained and pollination is accomplished.

In the beginning, the scout bee flies out of the hive and finds a source of nectar and/or pollen in a freshly opened blossom. She fills her crop with nectar and flies home to the hive. In a few minutes there are four or five bees on this plant, and within a quarter of an hour there may be as many as ten or fifteen, followed by no further increase in number.

The questions you are probably asking yourself are how did the honeybee tell her comrades about the discovery and direct them to it? How did she find the plant in the first place? Why were there no more visitors than the plant could accommodate?

Bees use a complex combination of senses in their orientation and in the recognition of food and hive, and their means of communications concerning the location of nectar are elaborate and precise. Numerous experiments have been conducted and they have all showed the ability of bees to differentiate between odors, colors, and forms and to further associate the different odors, colors, and forms with food. Therefore it is obvious that both sight and odor are important in the bee's orientation.

Bees are able to orient themselves in flight by the direction of the sun's rays and by memory of various landmarks. In this manner, they are able to return numerous times to the same blossoms and find their way back to the hive.

She is able to recognize and to convey information to her fellow workers concerning the particular type blossoms from which she obtained the nectar by scent. This is indicated by the aroma which is carried back on her body. On reaching the general area of the flowers, the other bees are then attracted to the same individual type blossom visited by the first bee. It is also believed that in their excitement, when workers locate the nectar producing flowers they may leave their scent, assisting other hive members to zero in on the treasure.

The process of communications has been described by von Frisch (1950) in his publication, *The Language of the Bees*. In his observations, von Frisch describes two types of dances; the round dance, and the wag-tail dance.

The round dance (Fig. 1) is done on the comb when the bee which has returned from a find runs around in narrow circles. She may do this for several seconds or even up to a minute, upon which she will stop and go to a different spot on the comb and start over again. Finally, she rushes toward the entrance and leaves the hive. The initial dance excites her fellow worker bees to follow the performance by placing their antennae on the dancing bee, and then they leave the hive in search of the nectar. This dance does not communicate direction, and most observers agree that this dance is usually performed when the source of nectar is no more than one hundred yards from the hive.

As with the round dance, the wag-tail dance (Fig. 2) is done on the comb of the hive. The



Fig. 1. Round Dance



Fig. 2. Wagtail Dance

is more than one hundred yards from the hive. The distance of the food source from the hive is indicated by the number of straight line runs in fifteen seconds. For example, at one hundred yards the number of straight runs per fifteen seconds were nine to ten; while at three and one-half miles only two runs were made. From the above figures, von Frisch (1957) stated that the time spent on the straight wag-tail run is best correlated with distance.

One interesting side light was brought up by Schweiger (1958), who observed that a head wind has the same effect on the dance as increased distance. That is, it slows the tempo of the dance. This indicates that the dance shows the amount of energy required to reach the source, rather than actual mileage. The wag-tail dance also communicates the direction of the nectar with regard to the hive and to the sun. This is done by the direction of the straight line portion of the dance in relation to the line of gravity, which represents the line between the sun and the hive (Fig. 3). If the source of the nectar is in line with the sun, the line is straight upward on the comb, while if

bee makes a narrow half circle to one side, then makes a sharp turn and runs in a straight line to the starting point, where she again makes a half circle in the opposite direction so that she completes a full circle. Again she runs a straight line to the starting point and she starts the process over once more. The name of the dance, wag-tail, comes from the fact that she wags her whole body while running in the straight line back to the starting point.

This dance is used when the nectar source

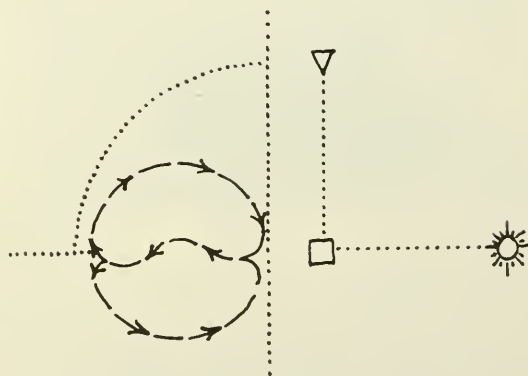
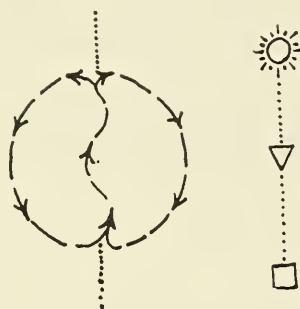


Fig. 3. Diagram of the Directional Guidance of the Wagtail Dance.

it is away from the sun, the line is straight downward. Any angle can be formed with the sun in relation to hive as is depicted in Figure 3.

There is a very strenuous round of activities during the warm season, with no vacations to relieve this activity, therefore, the life of the worker bee is about six weeks long.

BIBLIOGRAPHY

1. Grout, Roy A. *The Hive and the Honey Bee*. Hamilton, Illinois: Dadant and Sons, Inc., 1966, pp. 77-84.
2. Michener, C. and M. Michener. *American Social Insects*, 1951, pp. 6-29, 105-121.
3. Schweiger, E. M. *Z. Vergl. Physiology*, 1958, pp. 41, 272-299.
4. von Frisch, K.V. *Bees: Their Vision, Chemical Sense and Language*, Ithaca, New York: Cornell University Press, 1950, pp. 119.

Scott R. Traino '71

POLLINATION BY THE HONEY BEE



Apis mellifera, the honey bee.

Credit — L. Ivins Smith III

The keeping of honey bees has solved the pollination problems developed by our modern agricultural practices. The wild pollinating insects which at one time handled the pollination of our plants have been depleted. The removal of hedgerows, woodlots, the replacement of wooden fenceposts with metal, clean culture and heavy grazing have destroyed the homes and breeding grounds of the native pollinators. The increasing use of insecticides for control of in-

jurious insects, wind drifting of dusts and sprays on to field borders and such broadcast spraying as the gypsy moth program have done a good job at eliminating the natural pollinators. Even if the natural pollinators remained unharmed, the trend of modern agriculture to grow large acreages of specialized crops would find their effect inadequate. The answer to the pollination problem is the honey bee.

The honey bee (*Apis mellifera*) is well suited for the role of pollinator. Unlike the native wild bees, the honey bee is a colonial insect throughout the year and therefore is available in force at any season. The honey bee colony is a social unit consisting of tens of thousands of workers, a few drones and a queen. The worker bees are the pollinators and possess a never ceasing urge to gather pollen and nectar. Worker bees have dense body hairs that catch pollen, which is removed by comb-like structures on the legs. As the bee goes about his business, the pollen on his body hairs and in his pollen basket is transferred from flower to flower. The colony accepts the home supplied by man which can be moved to any location by the beekeeper.

In the past, farmers took pollination for granted and even charged beekeepers for the use of their crops. Times have changed and growers now realize the importance of pollination. Approximately fifty cultivated plants require insects' pollination to survive. Alfalfa, sweet clover, watermelons, apples and cucumbers are but a few. Growers of greenhouse vegetables have also found it necessary to provide bees for adequate pollination to occur.

Pollinators are essential for seed development in carrots, radishes, turnips, cabbage, celery and many other vegetables. Unless an apple has its full complement of well-developed seeds, it will be lopsided and misshapen. The same holds true for the cucumber and the cantaloupe. The placement of honey bee colonies in such crops almost guarantees well-formed produce.

Self-sterile crops such as sweet cherries, some pears, Japanese plums, and a great number of apple varieties need cross-pollination in order to bear fruit. The honey bee serves as the cross-pollinizer, pollinating the self-sterile flowers with pollen of a compatible variety.

In the areas of concentrated plantings, the grower must call upon the bee industry to supply the great number of pollinizers needed during the critical blossoming time. A contract is drawn up stating the date of placement in the field and the rental fee. A fee which ranges from five to fifteen dollars per colony. The grower is usually responsible for any colonies damaged by indiscriminate insecticide application or vandalism. Colonies are often transported great distances in the pursuit of blossoming crops. Many thousands of colonies are regularly carried from New York State to Maine to pollinate the vast low bush blueberry crop. With a little planning, a smart beekeeper can cover from two to five crops and collecting as many rentals. In New Jersey it is possible to cover three different crops — apples, blueberries and cranberries, without moving out of the state. The honey and beeswax are usually considered a by-product of such operations.

There are about six million honey bee colonies in the United States. With the increase of large concentrated plantings of deciduous fruits and legumes and the increase of greenhouse vegetable raising, the bee industry will have to expand. Beekeeping is a specialty just as other industries. It requires cooperation between the grower and the beekeeper to make pollination successful and profitable on both sides.

BIBLIOGRAPHY

1. Graut, Roy A. *The Hive and the Honey Bee*. Hamilton, Illinois: Dadart and Sons Inc., 1966.
2. *Insects, The Yearbook of Agriculture*, USDA. 1952.
3. Root, A.I., *The ABC and XYZ of Bee Culture*. Medina, Ohio: A.I. Root Company, 1966.

Samuel J. Yant '69

HONEY

When prehistoric man reached deep into a bee tree or a cleft in the rocks for a highly prized store of honeycomb, he must have felt that the prize was worth the price he had to pay in stings from the outraged bees. Man's veneration of the bee and its products, honey and wax, can be traced through the entire span of his history.

Honey by definition is a sweet, viscous liquid, prepared by bees from the nectar collected from plants by the bees and stored by them for food. Honey originates from plant nectar. This nectar is made up of sugars, the major one being sucrose, as well as minerals, vitamins, enzymes, and approximately 80% water.

The nectar is converted by the honey bee into honey. In the conversion, the sucrose is converted into the simple sugars dextrose and fructose, and the water is evaporated from the 80% level to one of 18.67% or below. The minerals, vitamins, enzymes, and other sugars are retained in the process. Once this process has been completed, the honey is said to be "ripe."

Honey has many natural properties. First of all it is hygroscopic; that is, it will take up water readily. Secondly it is viscous, or a thick flowing liquid. Due to its high sugar content, it also has antibacterial properties. Finally, many types of honey will crystallize, this depending upon the storage temperature and the floral source from which the nectar was gathered.

Honey is a complex of simple sugars, and when eaten, it is easily assimilated by the body. For this reason, it has been found to be an excellent source of carbohydrates in the diets of infants and elderly people. For the same reason, it is consumed by many athletes as a source of quick energy.

Honey is used in different ways. It can be eaten on bread or used in beverages such as coffee and tea. The baking industry uses honey in large quantities, for honey has the ability to maintain the moistness of the finished product. In some cases, honey is fermented to produce a honey wine known as "mead." "Mead" was consumed by the Vikings hundreds of years ago, and it is still produced commercially in limited quantities. Honey may also be combined in its finely crystallized form with various dried fruits such as apricots and strawberries. This results in a non-running product with a pleasing sweet-sour, honey-fruit flavor balance.

Honey is principally classified by the method of production and of preparation for market. The two major classes are extracted and comb honey. The extracted honey is separated from the comb by centrifugal force, gravity, straining, or by other means. It is then filtered, and may appear on the market as liquid honey or as finely crystallized honey spread. Comb honey is marketed as it was stored in the cells of the comb by the bees. This can be either as small wooden boxes of comb honey, pieces of the honey comb placed in a plastic container, or included in a jar with liquid honey.

It is evident that honey is a diverse product with unique qualities that is a product of high demand. Although technology changes, science has failed to replace the honey bee.



Brian Rice '71

THE WAITING

The rain beat the ground.
It's a spring rain that winter's found.
Water, wet and flowing in its amorphous liqui'ty
Unlike the cold biting snow that's slippery.

The sun burned through the waning rain.
Could it be a summer sun that winter's found?
Brilliant and blinding it warms the still day,
Unlike the cloud covered disc at winter's bay.

The moon screamed harshly
As it climbed over the horizon.
It hissed a cold fire that burned my eyes
While the wind lashed about my head.

The moon, the rain, the sun
Which bring the tide of changing seasons,
All seemed to be perfect that day and night
But had been drowned on the morn by white.

IT'S ALL HAPPENIN' AT THE ZOO



A small child strikes up a conversation with a resident Emu.

Credit — Schlieder

The Norristown Zoo was founded in 1924 by a former funeral director by the name of Kolchotz. Mr. Kolchotz was an avid hunter and conservationist, and donated some of the early specimens for the zoo. Since its humble beginning, the Lions and Rotary Clubs of Norristown have helped tremendously in the zoo's development. With guidance of men like Carl Branka, the zoo's first curator, the collection has expanded to its present size.



The zoo features three specimens of American bison.

Credit — L. Ivins Smith III

Over one hundred species of wildlife can be seen at the zoo. Featured in the Zoo House are the primates and the cats. Among the primates housed there, "Butch," the spider monkey, ranks as the zoo's oldest resident. The zoo's new Aviary was completed in 1961 through the efforts of a concerned citizenry, and boasts a large and varied collection of birds. Many rare and exotic species keep the talking Mynah bird company in this modern structure.

The zoo is situated in a beautifully landscaped, five acre section of Elmwood Park. Many of the trees are labeled for easy identification and a wide number of animals are displayed out-of-doors in naturalized and spacious cages. Among these features is a water fowl pond as well as housing for the bears, foxes, goats, bison, deer, zebra and many, many more.

The animals in the zoo get the finest of food and general care. The animals at the Norristown Zoo receive special



Two young zebras are among the newest additions to the zoo.

Credit: L. Ivins Smith III



Many children get their first glimpse of domesticated farm animals at the zoo. The zoo is open seven days a week from 8:00 a.m. to dark.

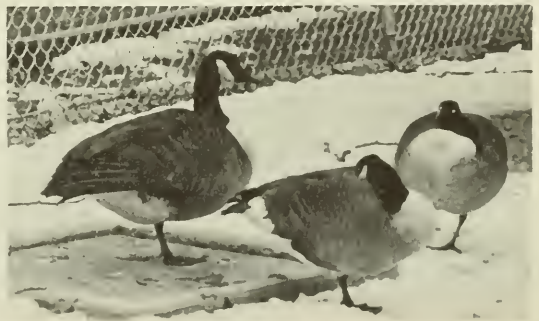
Credit: L. Ivins Smith III

unless the public makes it clear to those in charge that they support the zoo, not only in letters, but also in contributions.

Despite its occasional hardships, the Norristown Zoo has dynamic plans for the future which include the erection of a Children's Zoo and many other additions not only of facilities, but specimens as well.

diets as recommended by the Philadelphia Zoological Gardens. This exceptional care reflects in the fact that many of the zoo's animals have exhibited longer life spans than normally found in the larger zoos.

All this is not to say that the Norristown Zoo is without its faults. Just as larger zoos find it hard at times to fund their up-keep and expansion, the Norristown Zoo finds it even more difficult. The zoo relies upon Norristown's Borough Council and private donations. With rising costs as they are, small zoos like Norristown's may be forced to close



Several species of geese can be found in the zoo's waterfowl compound.

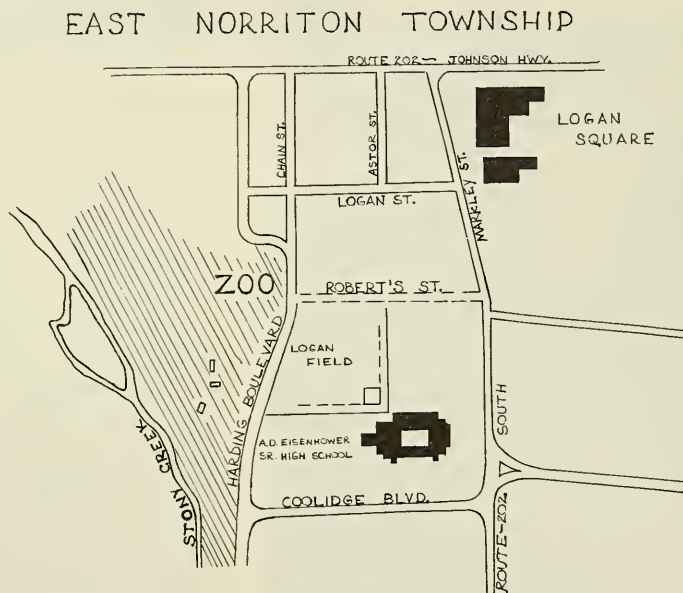
Credit: L. Ivins Smith III



The zoo's modern Aviary was dedicated on January 5, 1964.

Credit: L. Ivins Smith III

It's clear to see that a lot is happenin' at the Norristown Zoo. So if you happen to be on a Spring drive and find yourself in the vicinity of Norristown, why not stop and see this small, but nevertheless amazing zoo. You will never regret it.



Location of the Norristown Zoo



Stephen Maddock Cooper '70

Parting

Memory returns the mind to love
yet only Love can return the heart.

'69



Credit: Barry Weissman

THE UNANSWERED QUESTION

The prospective graduate student graduates this year with a question that has been put off, and left unanswered for four years. The question, of course, concerns the draft. It is an immense question to the graduate schools also, for the draft will be the ultimate factor in the determination of the success or failure of the graduate programs, and the academic advances of the university. Indeed, the problem reaches much further than just the university. The draft may be a severe blow to this country's scientific and technological advances.

What is the prospective graduate student (unless he plans to enroll in dentistry, medicine, or ministry — in which case he is deferred) to do? Of course, he can be aquiescent, and simply leave for Fort X instead of University Y. On the other hand, he can become a militant revolutionary, burn his draft card, conduct a sit-in at his local board — and land in jail. Then there are those excellent graduate schools in Canada, Sweden . . . But let's not worry about that now, we have plenty of time — a whole month! Instead, what will be the effects of the draft on the graduate schools in the United States? And, will the graduate student make a good soldier?

First of all, it has been estimated by *Science* (2) that if the present draft rulings hold, the graduation of doctorates in 1972 will be 16,000 men and women — back to the 1963 level, and the graduate schools will be depleted by 40 per cent (2:856). The graduate schools are not only losing students, they are losing university teachers, and university researchers. Many professors who depend greatly on graduate students who have research assistantships to help in research will suffer serious consequences.

The smaller graduate schools, of course, will feel the impact the most. Many of these schools are barely making ends meet at the present time. With the loss of graduate student manpower, they face, according to *Time* (6), the real threat of financial ruin.

Gustave O. Arlt, the President of the Council of Graduate Schools in the United States, says:

"The severest impact will be the loss of trained manpower which this country will not feel until the early 1970's . . . this is a ten year setback." (7:33)

R. J. Preston, the Dean of the School of Forest Resources at North Carolina State University says:

"The decision to draft graduate students is, I believe, tragic. These are our most intelligent young people, and our competitive position in world affairs in the years immediately ahead will depend largely on their training and competence." (3:18)

Another big headache is that the Congress and Federal agencies have drastically reduced funds for graduate fellowships because of the spending for the Vietnam war (8:68).

The second question which arises is will graduate students make good

soldiers. This question must be deeply analyzed.

The United States Department of Defense reports that 55 per cent of 1969's draft call will be composed of college graduates and graduate students. This is compared to 1967's draft call, when only four per cent of 230,000 inductees were college graduates. (2:856)

The Army has stated a preference for a young (19-20) draft pool, and rightly so. Young men have more flexible minds, and will generally more easily obey directions. Former Defense Secretary, Robert S. McNamara, feels that graduate students would not make good soldiers, for they are men who have been studying half their lives, and don't obey orders as well as an 18 year old (1:78).

The great addition of college graduates and graduate students will raise the average age of induction from 20.3 years to over 23 years (2.856). They will fill the army ranks with thousands of men who question the very war they are sent to fight. These are men who are set in their ways, and generally know the goals they want to pursue. These are men who have been reading the newspapers and news magazines and know what the war is all about. Perhaps this is the reason why there is so much dissension on America's campuses.

The war is still in full swing. Back in September, one could hear people say that maybe the war will end with the initiation of the Paris Peace Talks. And then, as the new year commenced, one could hear people say that maybe the war will end with the Nixon Administration. Maybe . . . maybe . . . maybe. The war is still on!

It is May, and you are now graduated. To which group do you belong: the acquiescent, the militant revolutionary, or the escape group? Or would you rather just sit back, and hope they've lost you in the files? Make up your mind — there really is no other choice.

LIST OF LITERATURE CITED

1. "A Cold Draft." *Newsweek*, March 4, 1968. 71:78.
2. "The Draft: Administration Orders End to Graduate Deferments." *Science*, Feb. 23, 1968. 159:856.
3. "The Draft Cometh." *American Forests*, May 1968. 74:17-19.
4. "The Draft: Grad Schools, Students Feel Impact of New Regulations." *Science*, June 7, 1968. 160:1088-1091.
5. "Draft for Graduate Students." *Saturday Review*, March 16, 1968. 51:74.
6. "The Draft: the Lame, the Halt, the Blind, and the Female." *Time*, Feb. 23, 1968. 91:17-18.
7. "The Draft: Student Callup." *Newsweek*, May 13, 1968. 71:33.
8. "Good-by, Grad School." *Newsweek*, December 18, 1967. 70:68.

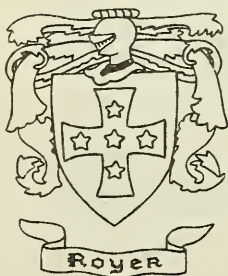
It was indeed unfortunate that due to financial pressures we were forced to exclude a great amount of material. We have found the student body eager not only to support, but also to contribute unlimited time and effort to improve THE GLEANER. We would like to especially express our regret to the following who submitted the excellent material that we were unable to print:

Mr. Benner
Dr. Berthold
Leon Bird
Steven Maddock Cooper
Howard Henderson
Bruce Horning
David Kamison

John Magin
John D. Martin
Frank McDonough
Norman Mogel
Richard Pflaum
Richard Polgar
Steven Schwartz

Lee Strassburger

ADVERTISEMENTS



ROYER GREENHOUSES

— Doylestown, Pa. —

HYBRID RHODODENDRON AND
AZALEA GROWERS

345-1211



THE PEDDLER'S PUB

WHERE DANCING IS MORE FUN

The Cock 'n Bull

DELICIOUS DINNERS SERVED DAILY

LAHASKA, PA.

794-7051





115 W. Court Street
Doylestown, Pa. 18901

Your Full Service Bank

Member F.D.I.C.

**Advertising Doesn't
Cost . . . It Pays
in both . . .
THE FURROW
and
THE GLEANER**

For complete advertising rates write:
Delaware Valley College Publications
Delaware Valley College
Doylestown, Pennsylvania 18901

**EARLY PRINTING
SERVICE**

- PRINTING
- OFFSET
- LAYOUT
- DUPLICATING

Ed Early

329 S. Main St.
Doylestown, Pa. 348-5522

**Doylestown
Agricultural
Equipment Co., Inc.**

LAWN & ESTATE CENTER

ROUTE 611 — CROSS KEYS
DOYLESTOWN, PA. 18901
PHONE (215) 345-1300

BOLENS — SNAPPER
TORO — LAWNBOY
HOMELITE — SKI-DOO

**Kenny's
News Agency**

OVER 20,000 TITLES

to fulfill
your reading needs

17 W. STATE STREET
DOYLESTOWN, PA. 18901

348-5072

Compliments of

AGWAY

SUPPLIES FOR HOME • FARM • GARDEN

Route 611 Easton Rd.
Doylestown, Pa. 18901

PORTRAIT & COMMERCIAL PHOTOGRAPHER
PHOTOGRAPHIC EQUIPMENT & SUPPLIES

Maddox Photo Studios

CHARLES L. MADDOX, JR.

TELEPHONE:
348-5891

51 EAST STATE STREET
DOYLESTOWN, PA. 18901

LEONARD MYERS

JEWELER

130 W. STATE ST.
DOYLESTOWN, PA.

348-5049

*Keepsake Registered
Diamonds
Watches and Jewelry*

Compliments of

FRATER'S
ELECTRIC SERVICE INC.

348-4474

33 UNION
DOYLESTOWN

KERSHNER'S
PHARMACY

JOSEPH H. KERSHER, Ph. G.

7 N. Main Street
DOYLESTOWN, PA.

Phone 348-4666

Sick Room Supplies Prescriptions — Biologicals



PHONE 348-9041



PAUL W. HISTAND CO., Inc.

TRUCKS — FARM & INDUSTRIAL EQUIPMENT

DOYLESTOWN, PA.

40 Continuous Years of Dependable Service



SALES
SERVICE



GARDY'S

YOUR  *Hallmark* STORE

- BOOKS
- STATIONERY
- PRINTING

STATE and MAIN STREETS
DOYLESTOWN, PA.

348-5284

I. G. ROSENBURGER, INC.

Route 113, Silverdale, Pa.

FAMOUS FOR SERVICE SINCE 1909

John Deere

Agriculture and Industrial Equipment

Parts & Service

Lawn and Garden Supplies

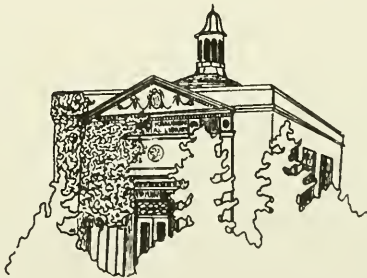
Goodyear Tires

Norge Appliances

257-2712

CH 8-2940

*1969 . . . another important contribution
in the growth of the college.*



**DELAWARE VALLEY
COLLEGE
STUDENT GOVERNMENT**

